Amendments to the Claims:

Please cancel Claims 3, 7, 13, 14, 18, 35, 39, and 45 – 47, and amend Claims 1, 4, 8, 12, 15 – 17, 19, 20, 33, 36, 40, 42, 44, and 48-49 and 57 as indicated in the following listing of claims, which replaces all prior versions and listings of claims in the application.

Listing of Claims:

1. (Currently Amended) An optical routing apparatus for directing an optical signal, the optical routing apparatus comprising:

(a) an input port configured to provide the optical signal;

(b) a plurality of output ports configured to receive the optical signal;

(c) a mirror; and

(d) a linear actuator disposed to move the mirror along an axis to a plurality of mirror positions, wherein in a first of such mirror positions the mirror is disposed such that the optical signal follows a first optical path from the input port to a first of the plurality of output ports, the first optical path including a reflection off the mirror, and wherein the mirror is disposed perpendicular to the axis.

2. (Original) The optical routing apparatus according to claim 1 wherein the plurality of output ports consists of two output ports.

3. (Canceled).

4. (Currently Amended) The optical routing apparatus according to claim ~~3~~ 1 further comprising a fixed reflective surface disposed such that the first optical path further includes a reflection off the fixed reflective surface.

5. (Original) The optical routing apparatus according to claim 4 wherein the fixed reflective surface is oriented perpendicular to the mirror.

6. (Original) The optical routing apparatus according to claim 4 wherein in a second of such mirror positions the mirror is disposed such that the optical signal follows a second optical path from the input port to a second of the plurality of output ports, the second optical path including a reflection off the mirror and off the fixed reflective surface.

7. (Canceled).

8. (Currently Amended) ~~The~~ An optical routing apparatus ~~according to claim 7 further~~ for directing an optical signal, the optical routing apparatus comprising:

(a) an input port configured to provide the optical signal;

(b) a plurality of output ports configured to receive the optical signal;

(c) a mirror;

(d) a first fixed reflective surface; and

(e) a linear actuator disposed to move the mirror along an axis to a plurality of mirror positions, wherein the mirror is disposed parallel to the axis and wherein in a first of such mirror positions the mirror is disposed such that the optical signal follows a first optical path from the input port to a first of the plurality of output ports, the first optical path including a reflection off the mirror and including ~~disposed such that the first optical path further includes~~ a reflection off the first fixed reflective surface.

9. (Original) The optical routing apparatus according to claim 8 wherein the first fixed reflective surface is oriented perpendicular to the mirror.

10. (Original) The optical routing apparatus according to claim 8 further comprising a second fixed reflective surface,

wherein in a second of such mirror positions the mirror is disposed such that the optical signal follows a second optical path from the input port to a second of the plurality of output ports, the second optical path including a reflection off the second fixed reflective surface and off the first fixed reflective surface.

11. (Original) The optical apparatus according to claim 1 wherein the mirror is disposed at an angle between 40° and 50° to the axis.

12. (Currently Amended) An optical routing apparatus for directing a first optical signal and a second optical signal, the optical routing apparatus comprising:

(a) a first input port configured to provide the first optical signal;

(b) a second input port configured to provide the second optical signal;

(c) a first output port configured to receive one of the first and second optical signals;

(d) a second output port configured to receive one of the first and second optical signals;

(e) a primary mirror; and

(f) a primary linear actuator disposed to move the primary mirror along a primary axis to a plurality of primary mirror positions, <u>the primary mirror being disposed parallel to the primary axis,</u>

wherein in a first of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a first optical path to the first output port and the second optical signal follows a second optical path to the second output port, ~~and~~

wherein in a second of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a third optical path to the second output port and the second optical signal follows a fourth optical path to the first output port,

<u>wherein the primary linear actuator lies in the path of the first optical signal in at least one of such first and second primary mirror positions</u>.

13. – 14. (Canceled).

15. (Currently Amended) The optical routing apparatus according to claim ~~14~~ 12wherein the primary linear actuator comprises a bore through which the first optical signal propagates when the primary mirror is positioned so that the primary linear actuator lies in the path of the first optical signal.

16. (Currently Amended) The optical routing apparatus according to claim ~~14~~ 12 wherein the primary linear actuator comprises an antireflective region transparent to a wavelength of the first optical signal, the region disposed such that the first optical signal propagates through the region when the primary mirror is positioned so that the primary linear actuator lies in the path of the first optical signal.

17. (Currently Amended) The optical routing apparatus according to claim ~~14~~ 12 wherein the primary linear actuator is antireflective and transparent to a wavelength of the first optical signal.

18. (Canceled).

19. (Currently Amended) ~~The~~ An optical routing apparatus ~~according to claim 18 further~~ for directing a first optical signal and a second optical signal, the optical routing apparatus comprising:

(a) a first input port configured to provide the first optical signal;

(b) a second input port configured to provide the second optical signal;

(c) a first output port configured to receive one of the first and second optical signals;

(d) a second output port configured to receive one of the first and second optical signals;

(e) a primary mirror that is reflective on two sides;

(e) a first fixed reflective surface ~~and~~;

(f) a second fixed reflective surface~~s~~; and

(g) a primary linear actuator disposed to move the primary mirror along a primary axis to a plurality of primary mirror positions, the primary mirror being disposed parallel to the primary axis,

wherein in a first of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a first optical path to the first output port and the second optical signal follows a second optical path to the second output port, ~~and~~

wherein in a second of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a third optical path to the second output port and the second optical signal follows a fourth optical path to the first output port, such first and second fixed reflective surfaces being disposed such that

the first optical path includes a reflection off a first reflective side of the primary mirror, two reflections off the first fixed reflective surface, and a reflection off the second fixed reflective surface,

the second optical path includes a reflection off a second reflective side of the primary mirror and a reflection off the second fixed reflective surface,

the third optical path includes a reflection off the first fixed reflective surface and a reflection off the second fixed reflective surface, and

the fourth optical path includes a reflection off the first fixed reflective surface and a reflection off the second fixed reflective surface.

20. (Currently Amended) ~~The~~ An optical routing apparatus ~~according to claim 13 further~~ for directing a first optical signal and a second optical signal, the optical routing apparatus comprising:

(a) a first input port configured to provide the first optical signal;

(b) a second input port configured to provide the second optical signal;

(c) a first output port configured to receive one of the first and second optical signals;

(d) a second output port configured to receive one of the first and second optical signals;

(e) a primary mirror; and

(f) a primary linear actuator disposed to move the primary mirror along a primary axis to a plurality of primary mirror positions, the primary mirror being disposed parallel to the primary axis,

wherein in a first of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a first optical path to the first output port and the second optical signal follows a second optical path to the second output port, ~~and~~

wherein in a second of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a third optical path to the second output port and the second optical signal follows a fourth optical path to the first output port;

(g) a secondary mirror;

(h) a secondary linear actuator disposed to move the secondary mirror along a secondary axis to a plurality of secondary mirror positions;

(i) a tertiary mirror; and

(j) a tertiary linear actuator disposed to move the tertiary mirror along a tertiary axis to a plurality of tertiary mirror positions,

wherein in the first primary mirror position, the secondary mirror is disposed at a predetermined first secondary mirror position and the tertiary mirror is disposed at a predetermined first tertiary mirror position, and

wherein in the second primary mirror position, the secondary mirror is disposed at a predetermined second secondary mirror position and the tertiary mirror is disposed at a predetermined second tertiary mirror position.

21. (Original) The optical routing apparatus according to claim 20 wherein the secondary mirror is disposed parallel to the secondary axis and the tertiary mirror is disposed parallel to the tertiary axis.

22. (Original) The optical routing apparatus according to claim 21 wherein at least one of the primary, secondary, and tertiary linear actuators comprises a bore through which at least one of the first, second, third, and fourth optical signals propagates.

23. (Original) The optical routing apparatus according to claim 21 wherein at least one of the primary, secondary, and tertiary linear actuators comprises an antireflective region transparent to a wavelength of at least one of the first, second, third, and fourth optical signals and through which such at least one optical signal propagates.

24. (Original) The optical routing apparatus according to claim 21 wherein at least one of the primary, secondary, and tertiary linear actuators is antireflective and transparent to a wavelength of at least one of the first, second, third, and fourth optical signals.

25. (Original) The optical routing apparatus according to claim 21 further comprising a first fixed reflective surface and a second fixed reflective surface, such first and second fixed reflective surfaces being disposed such that

the first optical path includes a reflection off the first fixed reflective surface and a reflection off the tertiary mirror,

the second optical path includes a reflection off the first fixed reflective surface and a reflection off the second fixed reflective surface,

the third optical path includes a reflection off the primary mirror and a reflection off the tertiary mirror, and

the fourth optical path includes a reflection off the first fixed reflective surface and a reflection off the secondary mirror.

26. (Original) The optical routing apparatus according to claim 20 wherein the secondary mirror is disposed perpendicular to the secondary axis.

27. (Original) The optical routing apparatus according to claim 26 wherein the primary linear actuator comprises a bore through which at least one of the first, second, third, and fourth optical signals propagates.

28. (Original) The optical routing apparatus according to claim 26 wherein the primary linear actuator comprises an antireflective region transparent to a wavelength of at least one of the first, second, third, and fourth optical signals and through which such at least one optical signal propagates.

29. (Original) The optical routing apparatus according to claim 26 wherein the primary linear actuator is antireflective and transparent to a wavelength of at least one of the first, second, third, and fourth optical signals.

30. (Original) The optical routing apparatus according to claim 26 wherein the tertiary mirror is disposed perpendicular to the tertiary axis.

31. (Original) The optical routing apparatus according to claim 30 further comprising a fixed reflective surface disposed such that

the first optical path includes a reflection off the tertiary mirror and a reflection off the primary mirror,

the second optical path includes a reflection off the secondary mirror and a reflection off the fixed reflective surface,

the third optical path includes a reflection off the tertiary mirror and a reflection off the primary mirror, and

the fourth optical path includes a reflection off the secondary mirror and a reflection off the fixed reflective surface.

32. (Original) The optical apparatus according to claim 12 wherein the primary mirror is disposed at an angle between 40° and 50° to the primary axis.

33. (Currently Amended) A method for directing an optical signal, the method comprising:

(a) providing the optical signal from an input port; and

(b) reflecting the optical signal off a mirror that is configured for linear actuation along an axis to a plurality of mirror positions, wherein in a first of such mirror positions the mirror is disposed such that the optical signal follows a first optical path from the input port to a first of a plurality of output ports, and wherein the mirror is disposed perpendicular to the axis.

34. (Original) The method according to claim 33 wherein the plurality of output ports consists of two output ports.

35. (Canceled).

36. (Currently Amended) The method according to claim ~~35~~ 33 further comprising reflecting the optical signal along the first optical path off a fixed reflective surface.

37. (Original) The method according to claim 36 wherein the fixed reflective surface is oriented perpendicular to the mirror.

38. (Original) The method according to claim 36 wherein in a second of such mirror positions the mirror is disposed such that the optical signal follows a second optical path from the input port to a second of the plurality of output ports, the second optical path including a reflection off the mirror and off the fixed reflective surface.

39. (Canceled).

40. (Currently Amended) ~~The~~ A method ~~according to claim 39 further~~ for directing an optical signal, the method comprising:

(a) providing the optical signal from an input port;

(b) reflecting the optical signal off a mirror that is configured for linear actuation along an axis to a plurality of mirror positions, wherein in a first of such mirror positions the mirror is disposed such that the optical signal follows a first optical path from the input port to a first of a plurality of output ports, and wherein the mirror is disposed parallel to the axis; and

(c) reflecting the optical signal along the first optical path off a first fixed reflective surface.

41. (Original) The method according to claim 40 wherein the first fixed reflective surface is oriented perpendicular to the mirror.

42. (Currently Amended) The method according to claim 40 wherein in a second of such mirror positions the mirror is disposed such that the optical signal follows a second optical path from the input port to a ~~secord~~ second of the plurality of output ports, the second optical path including a reflection off the second fixed reflective surface and off the first fixed reflective surface.

43. (Original) The method according to claim 33 wherein the mirror is disposed at an angle between 40° and 50° to the axis.

44. (Currently Amended) A method for directing a first optical signal and a second optical signal, the method comprising:

(a) providing the first optical signal from a first input port;

(b) providing the second optical signal from a second input port; and

(c) reflecting the first optical signal off a primary mirror that is configured for linear actuation along a primary axis to a plurality of primary mirror positions,

wherein the primary mirror is reflective on two sides and is disposed parallel to the primary axis,

wherein in a first of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a first optical path to a first of a plurality of output ports and the second optical signal follows a second optical path to a second of the plurality of output ports, and

wherein in a second of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a third optical path to the second output port and the second optical signal follows a fourth optical path to the first output port,

wherein the first optical path includes a reflection off a first reflective side of the primary mirror, two reflections off a first fixed reflective surface, and a reflection off a second fixed reflective surface,

wherein the second optical path includes a reflection off a second reflective side of the primary mirror and a reflection off the second fixed reflective surface,

wherein the third optical path includes a reflection off the first fixed reflective surface and a reflection off the second fixed reflective surface, and

wherein the fourth optical path includes a reflection off the first fixed reflective surface and a reflection off the second fixed reflective surface.

45. – 47. (Canceled).

48. (Currently Amended) ~~The~~ A method ~~according to claim 45 further~~ for directing a first optical signal and a second optical signal, the method comprising:

(a) providing the first optical signal from a first input port;

(b) providing the second optical signal from a second input port; and

(c) reflecting the first optical signal off a primary mirror that is configured for linear actuation along a primary axis to a plurality of primary mirror positions,

wherein the primary mirror is disposed parallel to the primary axis,

wherein in a first of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a first optical path to a first of a plurality of

output ports and the second optical signal follows a second optical path to a second of the plurality of output ports, and

wherein in a second of such primary mirror positions the primary mirror is disposed such that the first optical signal follows a third optical path to the second output port and the second optical signal follows a fourth optical path to the first output port,

(d) reflecting at least one of the first optical signal and the second optical signal off a secondary mirror that is configured for linear actuation along a secondary axis to a plurality of secondary mirror positions; and

(e) reflecting at least one of the first optical signal ~~end~~ and the second optical signal off a tertiary mirror that is configured for linear actuation along a tertiary axis to a plurality of tertiary mirror positions,

wherein in the first primary mirror position, the secondary mirror is disposed at a predetermined first secondary mirror position and the tertiary mirror is disposed at a predetermined first tertiary mirror position, and

wherein in the second primary mirror position, the secondary mirror is disposed at a predetermined second secondary mirror position and the tertiary mirror is disposed at a predetermined second tertiary mirror position.

49. (Currently Amended) The method according to claim 48 wherein the secondary mirror is disposed parallel to ~~thesecondary~~ the secondary axis and the tertiary mirror is disposed parallel to the tertiary axis.

50. (Original) The method according to claim 49,

wherein the first optical path includes a reflection off a first fixed reflective surface and a reflection off the tertiary mirror,

wherein the second optical path includes a reflection off the first fixed reflective surface and a reflection off a second fixed reflective surface,

wherein the third optical path includes a reflection off the primary mirror and a reflection off the tertiary mirror, and

wherein the fourth optical path includes a reflection off the first fixed reflective surface and a reflection off the secondary mirror.

51. (Original) The method according to claim 48 wherein the secondary mirror is disposed perpendicular to the secondary axis.

52. (Original) The method according to claim 51 wherein the tertiary mirror is disposed perpendicular to the tertiary axis.

53. (Original) The method according to claim 52,

wherein the first optical path includes a reflection off the tertiary mirror and a reflection off the primary mirror,

wherein the second optical path includes a reflection off the secondary mirror and a reflection off a fixed reflective surface,

wherein the third optical path includes a reflection off the tertiary mirror and reflection off the primary mirror, and

wherein the fourth optical path includes a reflection off the secondary mirror and a reflection off the fixed reflective surface.

54. (Original) The method according to claim 44 wherein the primary mirror is disposed at an angle between 40° and 50° to the primary axis.

55. (Original) A wavelength router for receiving, at an input port, light having a plurality of spectral bands and directing subsets of the spectral bands to respective ones of a plurality of output ports, the wavelength router comprising:

(a) a free-space optical train disposed between the input port and the output ports providing optical paths for routing the spectral bands, the optical train including a dispersive element disposed to intercept light traveling from the input port; and

(b) an array of optical routing mechanisms configured to direct each given spectral band, each such optical routing mechanism including:

(i) a mirror; and

(ii) a linear actuator disposed to move the mirror along an axis to a plurality of mirror positions,

wherein each given spectral band is directed to different output ports depending on the position of the linear actuator.

56. (Original) The wavelength router according to claim 55 wherein the dispersive element is a grating.

57. (Currently Amended) The wavelength router according to claim 56 wherein the optical train includes ~~focussing~~ focusing power incorporated into the grating.

58. (Original) The wavelength router according to claim 56 wherein the grating is a reflective grating.

59. (Original) The wavelength router according to claim 56 wherein the grating is a transmissive grating.

60. (Original) The wavelength router according to claim 55 wherein the mirror is disposed perpendicular to the axis.

61. (Original) The wavelength router according to claim 55 wherein the mirror is disposed parallel to the axis.

62. (Original) The wavelength router according to claim 55 wherein each optical routing mechanism is configured such that in a first position of the linear actuator, a first of the plurality of spectral bands is directed to a first of the plurality of output ports and a second of the

plurality of spectral bands is directed to a second of the plurality of output ports, and in a second position of the linear actuator, the first spectral band is directed to the second output port and the second spectral band is directed to the first output port.

63. (Original) The wavelength router according to claim 62 wherein the mirror is reflective on two sides.

64. (Original) The wavelength router according to claim 62 wherein each optical routing mechanism further includes:

(iii) a second mirror;

(iv) a third mirror;

(v) a second linear actuator disposed to move the second mirror along a second axis to a plurality of second mirror positions; and

(vi) a third linear actuator disposed to move the third mirror along a third axis to a plurality of third mirror positions.

65. (Original) The wavelength router according to claim 64 wherein at least one of the first, second, and third linear actuators comprises a bore through which one of the spectral bands is directed.

66. (Original) The wavelength router according to claim 64 wherein at least one of the first, second, and third linear actuators comprises an antireflective region transparent to a wavelength of one of the spectral bands and through which such one of the spectral bands is directed.